CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

TENTATIVE ORDER NO. 95-174
NPDES NO. CA0030023

WASTE DISCHARGE REQUIREMENTS AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER PERMIT FOR:

U.S. DEPARTMENT OF ENERGY
and
LAWRENCE LIVERMORE NATIONAL LABORATORY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter referred to as the Regional Board), finds that:

1. Lawrence Livermore National Laboratory (LLNL) operates a research facility under contractual agreements with the U.S. Department of Energy (DOE). LLNL and DOE are both hereinafter referred to as dischargers. Current major programs include defense, laser fusion, laser isotope separation, magnetic fusion energy, biomedical, environmental research, energy and resources, and environmental and waste management. LLNL uses, handles, produces, and stores a large variety of substances, including hazardous and radioactive materials, that could pollute storm water.

2. LLNL is located adjacent to the town of Livermore approximately one mile south of Highway 580 (see Attachment 1). The facility occupies approximately 332 hectares (821 acres). It is bounded by Patterson Pass Road on the north, Vasco Road on the west, East Avenue on the south, and Greenville Road on the east (see Attachment 2).

3. Federal regulations for storm water discharges were issued by the U.S. Environmental Protection Agency on November 16, 1990 pursuant to Title 40, Code of Federal Regulations Parts 122, 123, and 124 (40 CFR 122,123,124). The regulations require specific categories of facilities, which discharge storm water associated with industrial activity to obtain a NPDES permit and to implement Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate industrial storm water pollution.

4. Best Management Practices (BMPs) to control and abate the discharges of pollutants in storm water discharges are authorized where numeric effluent limits are infeasible and the BMPs are reasonably necessary to achieve compliance with effluent limitations or water quality standards.

5. The State Water Resources Control Board (SWRCB) adopted Order 91-13-DWQ, General NPDES Permit No. CAS000001, specifying waste discharge requirements for discharges of storm water associated with industrial activities, excluding construction activities, and requiring submittal of a Notice of Intent (NOI) by industries to be

covered by the permit. LLNL submitted a NOI to the SWRCB on March 27, 1992.

6. SWRCB Order 91-13-DWQ requires that all non-storm water discharges to storm water conveyance systems be eliminated or permitted. The Order allows the discharger a grace period of not more than three years from the date of the NOI submittal to eliminate or permit non-storm water discharges. LLNL has submitted a Report of Waste Discharge, dated March 1995, to continue to discharge non-storm water from various operations on site to the storm drain system.

7. SWRCB Order 91-13-DWQ specifies that if an individual NPDES permit which covers storm water discharges is issued to a discharger, the general permit is automatically terminated on the effective date of the individual permit and no longer applies. This Order will serve as an individual NPDES permit for discharges of storm water and non-storm water (identified in Finding #8) from LLNL, excluding discharges from groundwater remediation systems operated in compliance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Discharges from on-site pump and treat groundwater remediation systems are currently covered by Board Order No. 88-075 and Board Order No. 91-091 and the CERCLA Record of Decision.

8. A Storm Water Pollution Prevention Plan (SWPPP) has been developed by the dischargers in order to minimize storm water pollution from their activities. The SWPPP identifies the following potential sources of storm water pollution:

   a. Non-storm water discharges to drains,
   b. Vehicle and equipment and fueling,
   c. Vehicle and equipment washing and steam cleaning,
   d. Vehicle and equipment maintenance and repair,
   e. Transportation and loading/unloading of industrial material and waste,
   f. Outdoor container storage of liquids,
   g. Outdoor process equipment operations and maintenance,
   h. Outdoor storage of raw materials, products, and by-products,
   i. Waste handling and disposal,
   j. Contaminated or erodible surface areas,
   k. Building and grounds maintenance, and
   l. Building repair, remodeling, and construction.

9. The following groups of non-storm water discharges have been identified and described in the Report of Waste Discharge along with appropriate Best Management Practices followed for these discharges:

   a. Building conduits - floor drains, floor sinks, and cup sinks,
   b. Equipment sources - pressure relief valves, air conditioner condensate, ice makers, cooling tower heat exchanger cleaning, and air compressors,
   c. Building and grounds maintenance - landscape irrigation, building and pavement washing, storm drain maintenance, drinking fountains,

uncontaminated groundwater discharges, rain water collected in secondary containment and utility boxes, and rinsing activities

d. Fire suppression and safety systems - emergency eye washes, safety showers, fire hydrant and building sprinkler system testing, LLNL fire department activities

e. Water systems - water tanks, standpipes, water system distribution, and low conductivity water systems.

10. Storm water monitoring activities have occurred at LLNL since 1975. Currently, there are seven storm water monitoring stations where samples are collected to be analyzed for chemical parameters. Monitoring locations include three influent locations, two effluent locations, and two on-site locations. Samples are collected from each station at least twice per year and analyzed for a variety of constituents including pH, total suspended solids, specific conductance, total organic carbon, metals, minerals, pesticides, volatile and semi-volatile organic compounds, and radioactivity.

11. Storm drains at the Livermore site discharge into Arroyo Las Positas and Arroyo Seco, which combine to the west of the Livermore site and flow into Arroyo de Laguna. Arroyo de Laguna is a significant tributary to Alameda Creek, which flows to the San Francisco Bay. Arroyo Las Positas and Arroyo Seco are dry year round at LLNL, except immediately after a storm event or after the release of certain non-storm water discharges.

12. The Regional Board adopted a revised Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region on August 17, 1994. The Basin Plan contains objectives and discharge prohibitions for the Livermore-Amador Valley and its subbasins.

13. The existing and potential beneficial uses for surface waters in the Livermore-Amador Valley groundwater basin including Arroyo Mocho, Arroyo Seco, Arroyo Las Positas, Arroyo de Laguna, and their tributaries are:

    a. Contact and non-contact water recreation,
    b. Wildlife Habitat,
    c. Groundwater recharge, and
    d. Fish migration and spawning.

14. The existing and potential beneficial uses for groundwater underlying the Livermore-Amador Valley groundwater basins and its subbasins are:

    a. Municipal and domestic supply
    b. Industrial supply,
    c. Industrial service supply, and
    d. Agricultural supply.

15. The Basin Plan prohibits discharge of wastewater which has "particular characteristics of concern to beneficial uses":

    a. "at any point where the wastewater does not receive a minimal initial dilution of at least 10:1 or onto any nontidal water, dead-end slough, similar confined water, or any immediate tributary thereof", and

    b. "to Alameda Creek (watershed) where no natural flow occurs."

16. Since the discharges permitted by this Order are not expected to have characteristics of concern to beneficial uses, the above Basin Plan prohibitions will not apply.

17. Discharge prohibitions, effluent limitations, and receiving water limitations of this Order are based on the Basin Plan, State plans and policies, U.S. Environmental Protection Agency guidance, and best professional judgements.

18. Implementation of the provisions of this NPDES permit constitutes compliance with BAT/BCT requirements, and with the requirement to achieve water quality standards.

19. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.), in accordance with Section 13389 of the California Water Code.

20. The Board has notified the dischargers and interested agencies and persons of its intent to issue waste discharge requirements for these discharges and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

21. The Board, in a public meeting, heard and considered all comments pertaining to the discharges.

IT IS HEREBY ORDERED that the dischargers; in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of materials or wastewater, which are not otherwise permitted by this or another NPDES permit, to surface waters, a storm sewer system or waters of the United States are prohibited.

2. Discharges shall not cause or threaten to cause pollution, contamination, or a nuisance.

3. Discharges shall not contain concentrations of any materials which are deleterious to human, animal, or plant life.

4. Discharges shall not cause aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

5. Discharges shall not contain any hazardous substances equal to or in excess of a reportable quantity listed in 40 CFR Part 117 and/or 40 CFR Part 302.

B. Receiving Water Limitations

1. Storm water discharges to any surface or ground water shall not adversely impact human health or the environment.

2. Discharges shall not cause visible oil, grease, scum, foam, or floating or suspended material in or on the receiving waters or stream bottoms.

3. Discharges shall not cause the pH to fall below 6.5 or exceed 8.5 in receiving waters.

4. Discharges shall not cause an increase in concentrations of biostimulatory substances to the extent that such growth causes a nuisance, or will otherwise affect beneficial uses.

C. Provisions

1. The dischargers shall comply with all items of the attached "Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, dated August 1993, except provision E.6.d, which is replaced by the Release Reporting Proposal detailed in LLNL's letter dated February 1, 1994 and included in Attachment 3.

2. The dischargers shall maintain and implement their existing Storm Water Pollution Prevention Plan (SWPPP). At a minimum, the SWPPP shall include all the items listed in Section B.2. and B.3 of the attached Standard Provisions.

3. The dischargers shall comply with the attached Monitoring and Reporting Program, as adopted by the Board and as may be amended by the Executive Officer.

4. If, in the opinion of the Executive Officer, the results of monitoring activities indicate that water quality is being significantly impacted as a result of LLNL activities, the dischargers shall take action to identify the source of the pollution and to reduce or eliminate this source to the satisfaction of the Executive Officer.

5. The dischargers shall eliminate discharges from cooling tower heat exchanger cleaning operations to the storm drain system by November 30, 1996. A plan to eliminate these discharges shall be submitted to the Executive Officer for approval by December 1, 1995.

6. If the results of toxicity testing indicates that LLNL activities are contributing significant toxicity to the receiving water, a toxicity reduction evaluation (TRE) shall be performed to identify and control the source of the toxicity. The TRE may involve a toxicity identification evaluation (TIE). The objective of a TIE is to identify the chemical or combination of chemicals that are causing the observed toxicity. As toxic constituents are identified or characterized, the discharger shall continue the TRE by determining the source(s) of the toxic constituent(s) and evaluating alternative strategies for reducing or eliminating the constituent(s) from the discharge. All resonable steps shall be taken to reduce toxicity to the required level. Survivability of less than 20% of the control batch in two consecutive tests shall be used to determine if significant toxicity is being contributed by LLNL activities. A TRE study plan shall be submitted to the Executive Officer for approval within 60 days of the results of the second failed toxicity test.

7. The dischargers shall notify the Regional Board of any planned discharges greater than 10,000 gallons (i.e. water tank maintenance) at least 10 days in advance of such discharges. The discharges shall be dechlorinated and shall be free of any pollutants in concentrations that could affect the beneficial uses of receiving waters. Discharges shall be released in a way that prevents erosion of soil at the release site, drainage channels, or in the streambeds.

8. The dischargers shall eliminate other non-storm water discharges covered by this permit when practical to do so. For example, minor non-storm water discharges could be routed to the sanitary sewer system when a building is newly constructed or remodeled.

9. The dischargers must comply with the applicable requirements in the Alameda County Urban Runoff Clean Water Program developed to comply with municipal storm water NPDES permit issued by the Regional Board.

10. This NPDES permit expires August 23, 2000. The dischargers must file a report of waste discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

11. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Clean Water Act or amendments thereto and shall be effective 10 days after the date of its adoption provided the Regional Administrator, EPA has no objection. If the Regional Administrator

objects to its issuance, the permit shall not be effective until such objection is withdrawn.

I, Lawrence Kolb, Acting Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on August 23, 1995.

Lawrence Kolb
Acting Executive Officer

Attachments:

a. Attachment 1 - Site Location Map
b. Attachment 2 - Site Map
c. Attachment 3 - Monitoring and Reporting Program
d. Attachment 4 - Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993

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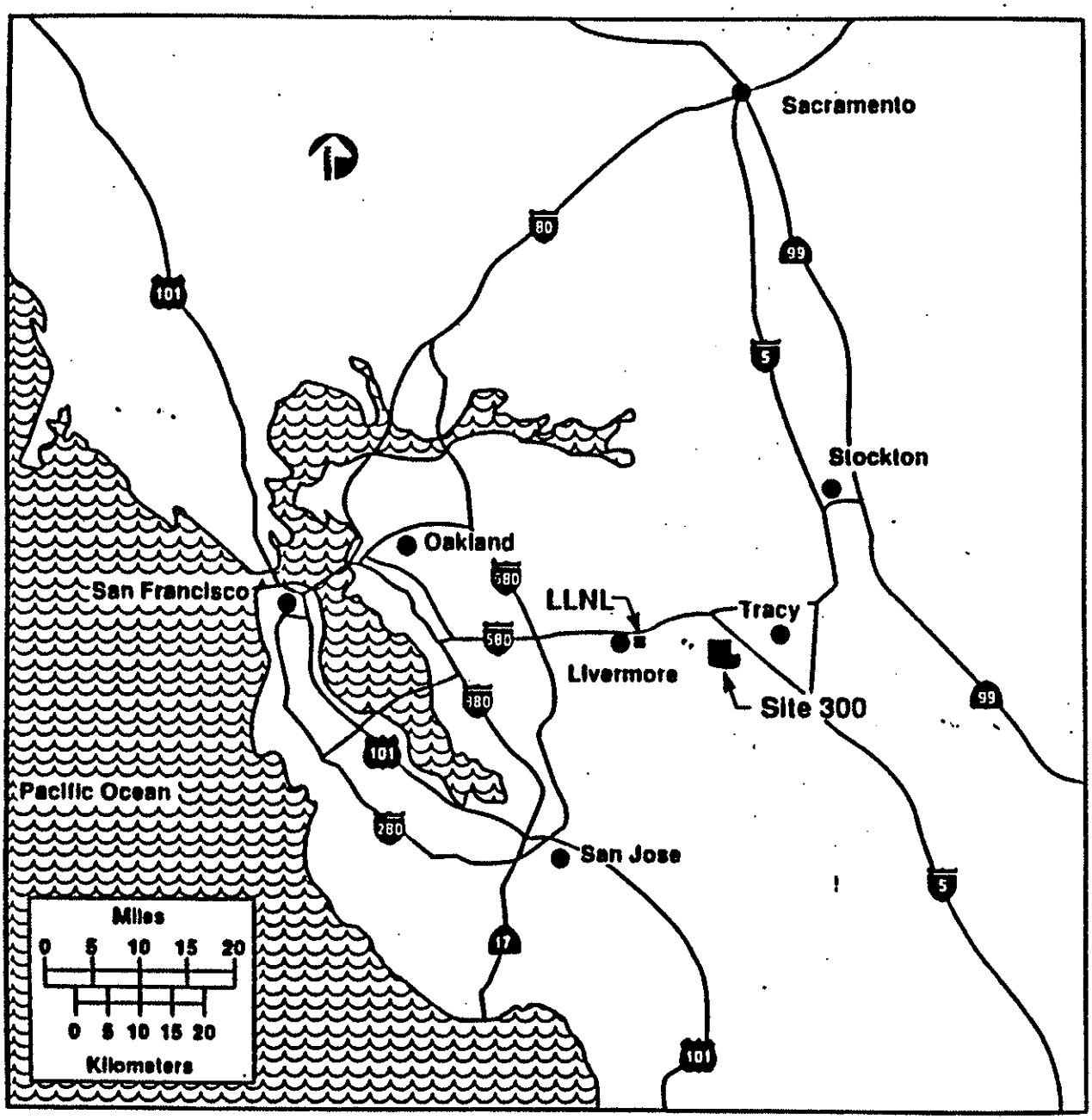

Attachment 1. Location Map of Lawrence Livermore National Laboratory Main Site.

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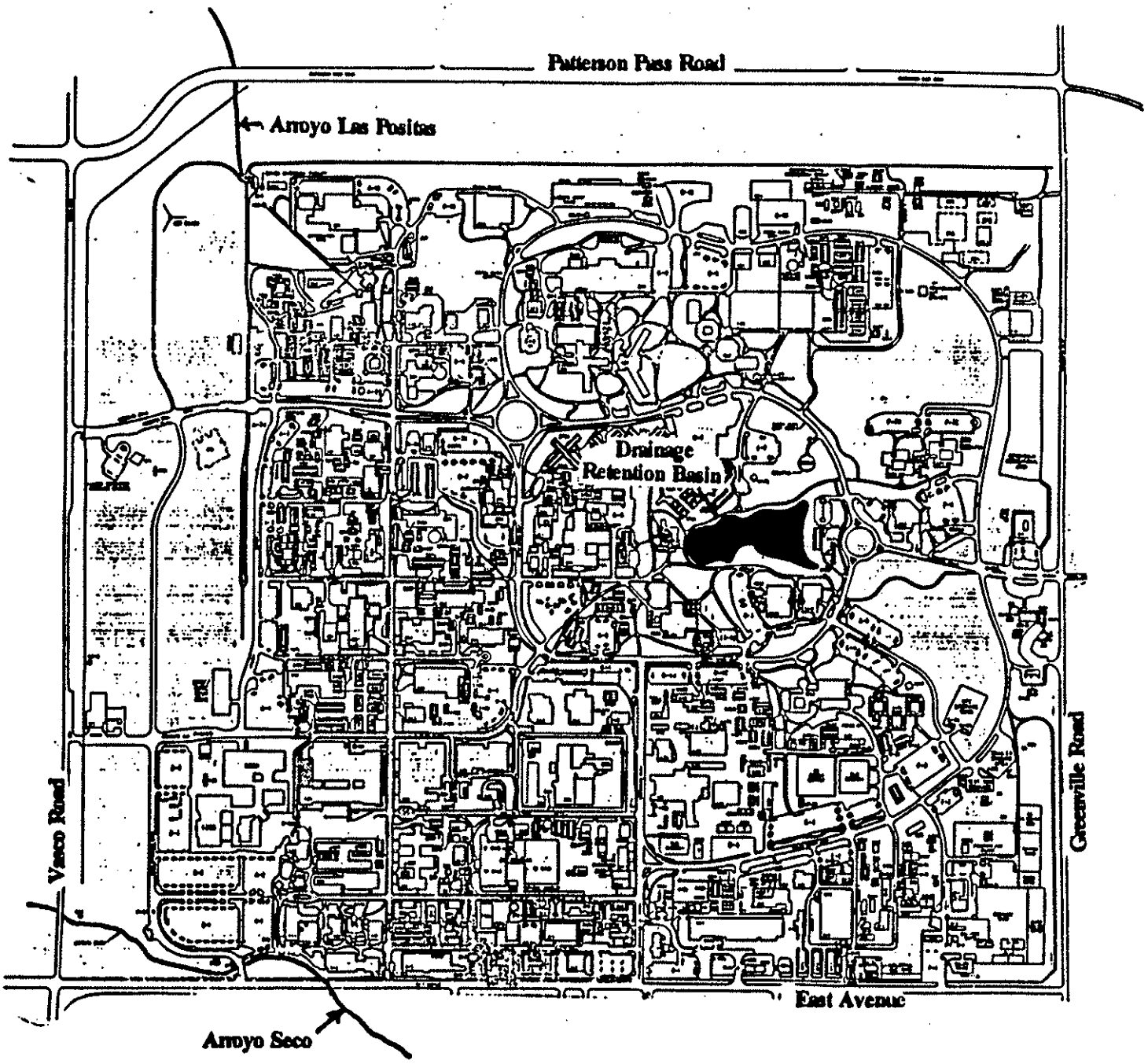

Attachment 2. Site Map of Lawrence Livermore National Laboratory Main Site.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
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ATTACHMENT 3
MONITORING AND REPORTING PROGRAM

A storm water monitoring program shall be maintained and amended when necessary, to meet the following objectives:

a. Ensure that storm water discharges are in compliance with the discharge prohibitions, Effluent Limitations, and Receiving Water Limitations specified in the attached Board Order.

b. Ensure practices at the facility to control pollutants in storm water discharges are evaluated and revised to meet changing conditions.

c. Aid in the implementation of the Storm Water Pollution Prevention Plan.

d. Measure the effectiveness of best management practices in removing pollutants in storm water discharges.

The storm water monitoring program shall contain the following elements:

a. Annual Site Inspection - An annual inspection of the site shall be performed to identify areas contributing to a storm water discharge and to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate and properly implemented or whether additional control measures are needed. A record of the annual inspection must include the date of the inspection, the individual(s) who performed the inspection, and the observations.

b. Dry Season Observations - No less than twice during the dry season (May through September), the dischargers shall observe areas with high potential of storm water pollution and non-storm water discharge locations to determine the presence of stains, sludges, odors, and other abnormal conditions. Records shall be maintained of the listing the dates and areas observed and noting any problems or unusual conditions.

c. Wet Season Visual Observations - During the wet season (October through April), the dischargers shall conduct visual observations of all storm water discharge locations during the first hour of one storm event per month that produces significant storm water discharge[1] to observe the presence of floating and suspended materials, oil and grease, discolorations, turbidity, odor, etc. Records shall be maintained of the listing the dates and areas observed and noting any problems or unusual conditions.

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[1]"Significant storm water discharge" is a continuous discharge of storm water for approximately one hour or more.

d. Sampling and Analysis - The dischargers shall collect and analyze samples of storm water discharge from at least two storm events each wet season which produce significant storm water discharge. At a minimum, samples shall be collected from both Arroyo Seco and Arroyo Las Positas at locations where the arroyos enter LLNL property and where they exit LLNL property. At a minimum, grab samples shall be collected and analyzed for the following constituents: pH, chemical oxygen demand (COD), dissolved oxygen (DO), gross beta, tritium, nitrate, phosphates, total dissolved solids (TDS), and total suspended solids (TSS).

e. Toxicity Testing - Fish bioassay samples shall be collected and analyzed at least once per wet season for acute and chronic toxicity using Fathead Minnow as the test species. The samples shall be collected at the LLNL property exit location of Arroyo Las Positas. Standard dilution water or water from Arroyo Las Positas upstream of LLNL property may be used as the control. If the acute toxicity results show less than 20% survival of the control batch, the dischargers shall perform toxicity tests as described above for the next significant storm water discharge.

f. Reporting - The dischargers shall submit an annual report by August 1 of each year to the Executive Officer. The report shall include a summary of visual observations, sampling results, and any instances of non-compliance. The first report is due on August 1, 1996 and includes the period starting of the previous year May 1 through April 30 of the current reporting year.